

REMARKS

Claims 20 and 25 have been amended. Applicants have added new claims 30 and 31. Accordingly, claims 20-31 are currently pending.

35 U.S.C. §103

The claims stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Ulmer et al. (EP 0 313 956 A2, Ulmer) in view of Collins et al., U.S. Patent No. 5,852,696 (Collins). Reconsideration of the rejection is requested in view of the foregoing amendments and for the following reasons.

Claims 20 and 25, which are the independent claims, set forth an optical communication apparatus and an optical module combination, respectively, in which a transparent resin is filled between a face of an optical device that is optically coupled to an optical fiber, and to the end of the optical fiber. Further, the claims have been amended to set forth that the transparent resin is silicone resin. As a result, claims 20 and 25 are not rendered obvious by the combination of Ulmer and Collins.

Support for the amendment to claims 20 and 25 is provided in the specification. For example, see page 29, lines 7-16 of the specification. In particular, a silicone resin is advantageous, as explained in the specification, because the elastic modulus of the silicone resin is lower than that of the epoxy resin. By using a silicone resin, the interface between the optical device and the resin is resistant to peeling. Since peeling is prevented, corrosion caused by formation of the water film at the interface can be prevented. These advantages are realized in the comprehensive molding method as well as the injection molding method of the invention.

As recognized in the Office Action, Ulmer does not disclose a transparent resin that is filled between a face of the optical device and the end of the optical fiber. Rather, Collins is relied upon for disclosing a transparent gel type sealing resin that bonds an optical fiber to a device. As set forth in column 2, lines 27-29 of the reference, the optical fiber is bonded to the laser facet with an index matching adhesive, for example an epoxy based adhesive. Accordingly, the choice of resin material according to Collins is epoxy,

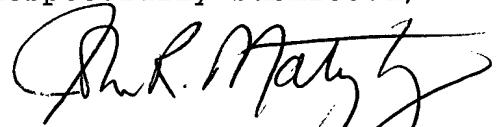
and not silicone resin, as in the present invention. The transparent silicone resin which is filed between a face of the optical device and the end of the optical fiber according to the present invention has advantages, as set forth above, which are not disclosed or suggested by Collins. In particular, the durability of the interface between the optical device (fiber) and the silicone resin is ensured by the lower elastic modulus of the silicone resin. That is, since the silicone resin has a lower elastic modulus, it changes shape more easily with the same amount of stress applied to it and is therefore more resilient and more resistant to damage caused by stress. These advantages are not suggested by the combination of Ulmer or Collins, and therefore the 35 U.S.C. §103(a) rejection of claims 20-29 should be withdrawn.

Applicants have added claims 30 and 31 that set forth additional limitations that are not disclosed or suggested by the art of record. Accordingly each of these claims should be allowed at least for depending from an allowable base claim and further for being patentable over the art of record.

Conclusion

In view of the foregoing amendments and remarks, Applicants contend that the above-identified application is now in condition for allowance. Accordingly, reconsideration and reexamination is requested.

Respectfully submitted,



John R. Mattingly
Registration No. 30,293
Attorney for Applicant(s)

MATTINGLY, STANGER & MALUR
1800 Diagonal Rd., Suite 370
Alexandria, Virginia 22314
(703) 684-1120
Date: October 4, 2004

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to:
Commissioner For Patents and Trademarks,
Alexandria, VA 22313-1450

on Oct. 4, 2004, by 